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ATTN: Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

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**DOMINION ENERGY KEWAUNEE, INC.**  
**KEWAUNEE POWER STATION**  
**SUMMARY OF FACILITY CHANGES, TESTS AND EXPERIMENTS AND SUMMARY**  
**OF COMMITMENT CHANGES**

Pursuant to 10CFR 50.59(d)(2), enclosed is a summary description of Facility Changes, Tests and Experiments evaluated in accordance with 10 CFR 50.59(c) and implemented at the Kewaunee Power Station (KPS) during the last reporting period, which is defined as not to exceed 24 months.

A commitment change evaluation summary for those commitment changes that occurred during the last reporting period is also enclosed.

The enclosed summary encompasses all changes that occurred in both of the stated areas since our prior submittal of this information.

If you have questions or require additional information, please feel free to contact Ms. Mary Jo Haese at 920-388-8277.

Very truly yours,

Michael J. Wilson  
Director Safety and Licensing, Kewaunee Power Station

Commitments made by this letter: NONE

IE417  
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**ATTACHMENT 1**

**SUMMARY OF FACILITY CHANGES, TESTS AND EXPERIMENTS  
AND SUMMARY OF COMMITMENT CHANGES**

**KEWAUNEE POWER STATION  
DOMINION ENERGY KEWAUNEE, INC.**

## 10CFR50.59 Evaluations

### 10CFR50.59 Evaluation 08-09-02

#### Activity Evaluated

DCR 3750, Generic Letter (GL) 2008-01 Gas Accumulation Venting and Risk Mitigation Capabilities for Safety Injection (SI), Residual Heat Removal (RHR), and Internal Containment Spray (ICS)

#### Brief Description

DCR 3750 replaced selected existing system vent valves, installed additional vent locations, added a venting chamber to an existing SI vent valve outside containment, added a tubing extension at four vent valve locations for ease of access, added a manual isolation valve in series with the existing air-operated isolation valve in each 1" diameter SI accumulator fill line, and isolated (plug) the 3/4" diameter SI test lines inside containment from the SI pump discharge piping in three locations.

#### Reason for Change

The modification improved the ability to remove accumulated gas and to reduce the likelihood of gas accumulating in the SI, RHR and ICS systems.

#### Summary

The 50.59 evaluation addressed the following changes that were determined to be adverse:

- The installation of a venting chamber that is designed to be voided is not consistent with the current Updated Safety Analysis Report (USAR) requirement for all portions of the SI system to be full of water.
- The new manual isolation valves on the SI accumulator fill lines prevent remote filling of the SI accumulators as described in the USAR when the manual valves are in the closed position.
- The isolated (plugged) SI test lines cannot be used for valve testing as described in the USAR.

The evaluation concluded a no more than minimal increase in the likelihood of occurrence of a malfunction and a no more than minimal increase in the frequency of occurrence of an accident previously evaluated in the USAR. The evaluation further determined the possibility of a new accident and the possibility of a malfunction of a system/structure/component with a different result are not created.

**10CFR50.59 Evaluation 09-01-00****Activity Evaluated**

DCR 3632, Switchyard Modification and Transformers Replacement Project, Part 6 (DCR 3632-6), American Transmission Company (ATC) Switchyard Work

**Brief Description**

DCR 3632-6 modified the 138kV switchyard by creating a double-bus, double-breaker configuration for the East and West Buses in the switchyard. The modification included installation of new circuit breakers and disconnect switches. Coupling Capacity Voltage Transformers (CCVTs) were installed in lieu of Potential Transformers (PT) to enable the existing power line carrier relaying to be reused. Existing PTs were relocated. Data acquisition and monitoring systems were modified for the switchyard upgrade.

**Reason for Change**

The modification improved operating and maintenance flexibility by providing redundancy that can prevent entering a Technical Specification Limiting Condition for Operation (LCO) when either the Reserve Auxiliary Transformer or Tertiary Auxiliary Transformer (TAT) is unavailable.

**Summary**

The 50.59 evaluation addressed the installation of new active components (circuit breakers) that can increase the probability of a malfunction. The evaluation concluded a no more than minimal increase in the likelihood of occurrence of a malfunction and a no more than minimal increase in the frequency of occurrence of an accident previously evaluated in the USAR (loss of offsite power).

**10CFR50.59 Evaluation 09-02-00****Activity Evaluated**

DCR 3632, Switchyard Modification and Transformers Replacement Project, Part 4 (DCR 3632-4), TAT Supply Transformer Installation and Related 138kV Switchyard Work

**Brief Description**

The modification installed a new TAT supply transformer (TST) and associated 138kV and 13.8kV equipment, and included addition of a transformer foundation, oil containment pit, and firewalls. Various related switchyard activities were included in the modification, such as circuit breaker modifications, cable trench extension, new conduit for added underground cables, underground 13.8kV cable splices, and addition of a new South Control House and a Spare Parts Building in the switchyard.

### Reason for Change

The TST supplies power to the new TAT which was installed by DCR 3632. DCR 3632 improved reliability of offsite power to the station and improved operating and maintenance flexibility that can prevent entry into a Technical Specification LCO.

### Summary

The 50.59 evaluation addressed the installation of new components (switchyard breakers, TST, and underground cable and splices) that can increase the probability of a malfunction. The evaluation concluded a no more than minimal increase in the likelihood of occurrence of a malfunction and a no more than minimal increase in the frequency of occurrence of an accident previously evaluated (loss of offsite power).

### **10CFR50.59 Evaluation 09-04-02**

#### Activity Evaluated

DCR 3632, Switchyard Modification and Transformers Replacement Project, Part 2 (DCR 3632-2), Switchyard Control Interface

#### Brief Description

The activity modified the KPS substation-to-plant interface as required by the infrastructure improvements to the Kewaunee 345KV, 138KV, and 13.8KV switchyards. The scope of this modification included: Interlocking new switchyard relaying with the existing plant relaying; Modification to the Control Room Electrical Vertical Panel 'A' and the associated simulator panel; Modification to the Sequence of Events Recorder (SER) and Plant Process Computer System (PPCS) to reflect the new switchyard configuration; Modification of switchyard bus/breaker protection, controls and indications; Reworking and installation of new cabling; and Upgrade of Main Generator Breaker G1 protective relaying. This activity also implemented the TST load tap changer (LTC) in local manual mode, only.

### Reason for Change

DCR 3632 improved reliability of offsite power to the station and improved operating and maintenance flexibility that can prevent entry into a Technical Specification LCO action statement.

## Summary

The 50.59 evaluation addressed the installation of the new components (TST LTC, switchyard interface components) that can increase the probability of a malfunction. The evaluation concluded a no more than minimal increase in the likelihood of occurrence of a malfunction, and a no more than minimal increase in the frequency of occurrence of an accident previously evaluated (loss of offsite power).

## **10CFR50.59 Evaluation 09-06-00**

### Activity Evaluated

The activity evaluated was USAR Change Request (UCR) R22-014 and License Basis Document Change Request (LBDCR) NLAR-30.

### Brief Description

UCR R22-014 updated the KPS USAR Section 14 to document the safety analyses of certain non-LOCA transients and accidents performed with Dominion analysis methods. LBDCR NLAR-30 changed Technical Specification basis (TSB) 3.4 to ensure that it is consistent with the updated Dominion safety analyses documented in UCR R22-014.

The Dominion safety analyses applicable to UCR R22-014 and LBDCR NLAR-30 were performed using the Dominion Method of Evaluation (MOE) as described in Topical Report DOM-NAF-5-A, which was approved by the NRC and approved for addition to the KPS Technical Specifications. The Dominion MOE is (a) based on sound engineering practice, (b) appropriate for the intended application and (c) applied within the limitations, terms, and conditions of the applicable safety evaluation report (SER). Dominion has a thorough understanding of the methodology and has demonstrated through numerous applications of the MOE over an extended period of time at its other nuclear power stations that it is qualified to perform safety analyses for non-LOCA transients and accidents.

### Reason for Change

The purpose of UCR R22-014 was to update the KPS USAR Section 14 to document the safety analyses of certain non-LOCA transients and accidents performed with Dominion analysis methods. These transients and accidents were reanalyzed to ensure that the KPS USAR Section 14 safety analyses met applicable acceptance criteria using approved Dominion methods. The Dominion safety analyses for these transients and accidents became the analyses of record (AOR) for KPS.

The purpose of LBDCR NLAR-30 was to change Technical Specification basis (TSB) 3.4 to ensure that it is consistent with the updated Dominion safety analyses documented in UCR R22-014 as well as improve its clarity.

## Summary

The 50.59 evaluation addressed USAR Change Request R22-014 and LBDCR NLAR-30. A 50.59 evaluation was required since the activity resulted in a change to a MOE described in the USAR. The evaluation concluded that the activity does not result in a departure from a MOE described in the USAR used in establishing the design bases or in the safety analyses. The MOE is a change to a MOE that has already been approved by the NRC for the intended application.

## **10CFR50.59 Evaluation 09-08-01**

### Activity Evaluated

This activity evaluated DCR 3697, Replace Instrument Bus Transformers BRA-106 and BRB-106

### Brief Description

DCR 3697 modified the plant's electrical system by replacing fixed-tap transformers with new voltage regulating transformers. The change improves electrical distribution to downstream Quality Assurance 1 (QA-1) instrument panels and their downstream panels and components. The modification also: repowered existing instrument panels, removed isolation cabinets, resolved coordination issues between specific molded case circuit breakers and relocated equipment that would otherwise interfere with the installation of the new transformers.

### Reason for Change

The purpose of this change was to resolve voltage issues on downstream QA-1 instrument panels and their downstream panels and components so that adequate voltage is available during all normal and design basis accident/event conditions. The purpose was also to remove load from the QA-1 transformers and to improve the electrical supply coordination.

### Summary

This 50.59 evaluation addressed the new failure mechanisms associated with the new voltage regulating transformers. The evaluation concluded a no more than minimal increase in the likelihood of occurrence of a malfunction, and the possibility of a malfunction of a system/structure/component with a different result is not created.



## Commitment Change Evaluation Summary

### Document(s) Evaluated:

1. NRC Bulletin Letter 88-04: Potential Safety-Related Pump Loss, dated May 5, 1988
2. Letter from D.C. Hintz (WPSC) to USNRC dated July 8, 1988, title: "Initial Response to NRC Bulletin No. 88-04: Potential Safety-Related Pump Loss"
3. Letter from D.C. Hintz (WPSC) to USNRC dated January 31, 1989, title: "Follow-up Response to NRC Bulletin No. 88-04: Potential Safety-Related Pump Loss"
4. Letter from J.G. Giitter (USNRC) to C.R. Steinhardt (WPSC) dated February 10, 1989 title, "Response to NRC Bulletin 88-04 (TAC No. 69928)."
5. Letter from C.R. Steinhardt (WPSC) to USNRC dated April 26, 1991, title: "Status of WPSC Evaluation to Increase Safety Injection Pump Recirculation Flow in Response to NRC Bulletin 88-04: Potential Safety-Related Pump Loss"
6. Letter from C.R. Steinhardt (WPSC) to USNRC dated February 26, 1993 title: "Status of WPSC Evaluation to Increase Safety Injection Pump Recirculation Flow in Response to NRC Bulletin 88-04: Potential Safety-Related Pump Loss"
7. Letter from C.A. Schrock (WPSC) to USNRC dated April 23, 1993 title: "Status of WPSC Evaluation to Increase Safety Injection Pump Recirculation Flow in Response to NRC Bulletin 88-04: Potential Safety-Related Pump Loss"
8. Letter from C.R. Steinhardt (WPSC) to USNRC dated April 30, 1993 title: "Status of WPSC Evaluation to Increase Safety Injection Pump Recirculation Flow in Response to NRC Bulletin 88-04: Potential Safety-Related Pump Loss"
9. Letter from C.R. Steinhardt (WPSC) to USNRC dated November 8, 1994 title: "Close-out to NRC Bulletin 88-04: Potential Safety-Related Pump Loss"
10. Letter from M. J. Wilson (DEK) to Document Control Desk (NRC), "Summary of Facility Changes, Tests and Experiments and Summary of Commitment Changes," dated June 2, 2008

**Brief Description:** On May 5, 1988, the NRC issued Bulletin (BL) 88-04 (Reference 1), concerning potential safety-related pump loss. Wisconsin Public Service Corporation (WPSC), then licensee for Kewaunee Power Station (KPS) submitted a response to BL 88-04 on November 8, 1994 (Reference 9). In the response, WPSC committed to performing disassembled inspections of the safety injection (SI) pumps every 15 years to ensure no damage is occurring as a result of operation on minimum flow recirculation.

Based on an evaluation documented in reference 10, Dominion Energy Kewaunee, Inc. (DEK) revised the periodicity of the inspection commitment for SI pump 1A from 15 years to 16.5 years.

However, due to delays in obtaining a spare rotating assembly prior to the fall 2009 refueling outage (KR-30), DEK deferred the disassembled inspections to the next refueling outage (KR-31), which is scheduled to begin February 2011. In support of this deferral, in September 2009, DEK completed an additional evaluation to justify extending the periodicity of disassembled SI pump inspections to 18 years.

Accordingly, DEK revised the commitment for inspecting SI pumps to an 18-year interval.

For conservatism, in March 2010 DEK subsequently revised the commitment to perform disassembled inspections of the SI pumps to state that the 18-year interval will only apply to a single inspection period, followed by a return to the originally committed 15-year intervals.

**Scope:** BL 88-04 commitment regarding disassembled inspections of the SI pumps.

**Basis for Change:** Inspection of SI pumps every 15 years was implemented due to concerns for damage that can occur to pumps during operation at low flow rates. SI Pump A was inspected in 1993 after 12 years of operation. No evidence of damage due to minimum flow recirculation was found. SI Pump B was inspected in 1995 after 14 years of operation and no evidence of damage due to minimum flow recirculation was found. Review of the operating history of the pumps showed that the operation of the pumps in the period preceding these inspections was similar to current operating conditions. Since recirculation damage is cumulative and occurs gradually over time, the lack of any indication of recirculation damage in earlier inspections indicates that no significant recirculation damage is occurring in these pumps during operation at low flow rates.

The SI pumps have not endured excessively long operation or an excessive number of starts since their last disassembled inspection. Pump performance monitoring indicates no abnormal degradation in the performance of either SI pump.

Based on review of the maintenance and operational history of the Safety Injection pumps, the frequency of disassembled inspections may be extended to 18 years. The pumps have not shown any indication of abnormal wear or deterioration from operation on mini-flow recirculation. In addition, the cumulative run time on the pumps is low, and is expected to remain low for the remainder of the 18 year period. Review of data from pump operation indicates no sign of abnormal degradation. Therefore, there is high confidence that at the end of the 18 year period, the pumps will remain capable of providing the required flow under design and licensing basis conditions, including operation on minimum flow recirculation for 34.2 hours.

**Summary:** Based on evaluation of SI pump maintenance and operational history, the previous commitments regarding BL 88-04 disassembled inspections of the SI pumps have been revised and replaced by the new commitment stated below.

**Revised Commitment:** DEK will perform disassembled inspections of the safety injection (SI) pumps every 15 years to ensure no damage is occurring as a result of operation on minimum flow recirculation, following a one-time inspection interval of 18 years for each SI pump.

## **Commitment Change Evaluation Summary**

### **Document(s) Evaluated:**

1. NRC Generic Letter 2008-01: Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems, dated January 11, 2008
2. Letter from C.L. Funderburk (Dominion) to Document Control Desk (USNRC) dated April 7, 2008 title: "Generic Letter 2008-01 Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems-Schedule Extension for Three Month Response"
3. Letter from G.T. Bischof (Dominion) to Document Control Desk (USNRC) dated May 8, 2008 title: "Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems Three-Month Response Containing Alternative Actions"
4. Letter from M.C. Wong (USNRC) to C.L. Funderburk (Dominion) dated July 8, 2008, title: "Generic Letter 2008-01 "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" Response to Extension Request (TAC NOS. MD7838, MD7845, MD7846, MD7850, MD7851, MD7884, and MD7885)"
5. Letter from M.C. Wong (USNRC) to G.T. Bischof (Dominion) dated July 23, 2008, title: "Generic Letter 2008-01 "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"
6. Letter from J.C. Poole (USNRC) to D.A. Heacock (Dominion) dated April 1, 2010 title: "Closeout of Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"
7. Letter from J.A. Price (Dominion) to Document Control Desk (USNRC) dated October 14, 2008 title: "Nine-Month Response to NRC Generic Letter 2008-01, Managing Gas Accumulation In Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"
8. Letter from J.A. Price (DEK) to Document Control Desk (NRC), dated October 15, 2009 title: "Notification of Commitment Change - Generic Letter 2008-01 Procedure Revisions"
9. Letter from J.A. Price (DEK) to Document Control Desk (NRC), dated October 16, 2009 title: "Response to Request For Additional Information Regarding NRC Generic Letter 2008-01"

**Brief Description:** The DEK response to GL 2008-01 (Reference 7), KPS made the following commitment (page 41):

8. DEK will take actions needed to eliminate gas accumulations that were found during UT examinations of subject systems. The actions to be taken are still in development, but are expected to include some combination of installation of additional vent valves and procedure modifications to ensure systems are sufficiently filled after draining for maintenance. Alternatively, DEK may choose to revise design basis documents to establish new allowable design basis limits on gas accumulation.

The locations where gas accumulations were found that will be corrected include:

- Train A ICS discharge piping near the containment penetration
- Train A ICS discharge piping branch line associated with the full flow test line
- Caustic addition branch line to the ICS suction piping
- CVCS-RHR cross-connect piping from the RHR discharge piping
- RHR-to-Spent Fuel Pool interconnection branch line from the RHR discharge piping
- Train A RHR mini-flow recirculation branch line from the RHR discharge piping
- SI test line branch from the SI discharge piping
- Suction bypass branch to the SI suction piping
- RHR normal cooldown suction line from RCS loop A.

Schedule: Complete prior to the end of the next Refueling Outage KR 30 (fall of 2009).

From the above list, the following voids have not been eliminated or accepted by revision to design basis analysis:

- CVCS-RHR cross-connect piping from the RHR discharge piping
- RHR-to-Spent Fuel Pool interconnection branch line from the RHR discharge piping
- Suction bypass branch to the SI suction piping

The revised commitment description states:

1. DEK will take actions needed to resolve the gas accumulations at the following locations:

- CVCS-RHR cross-connect piping from the RHR discharge piping
- Suction bypass branch to the SI suction piping
- RHR-to-Spent Fuel Pool interconnection branch line from the RHR discharge piping

Resolution may include installation of additional vent valves, procedure modifications to ensure systems are sufficiently filled after draining for maintenance, or revision of design basis documents to establish new allowable design basis limits on gas accumulation. These actions, originally scheduled to be completed by the end of refueling outage KR 30, will be completed by the end of refueling outage KR 31 (spring of 2011).

**Scope:** NRC Generic Letter 2008-01: Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems

**Basis for Change:**

1. CVC-RHR cross-connect piping from the RHR discharge Piping

The gas in the CVC-RHR cross-connect piping from RHR Train A discharge piping was believed to be caused by LD-60 from Letdown into RHR. Repairs were made to LD-60 during KR-30, however, gas was still found at this location when RHR was returned to the at-power lineup. Temperature measurements indicate RHR-44 [check valve bypass around LD-60] is leaking. Additional corrective actions will be needed to eliminate this source of in leakage.

2. Suction bypass branch to the SI suction piping

During the previous operating cycle, the SI suction bypass line was found to be largely voided. During KR-30, DCR 3750 installed vent valve SI-31-1 in the suction bypass line. After the system was refilled, UT determined that a void existed upstream of manual valve SI-31 due to the configuration of the seat in valve SI-31. Additional analysis will be required to eliminate this void or accept it as a design basis condition.

3. RHR-to-Spent Fuel Pool interconnection branch line from the RHR discharge piping

In addition to the above voids that have not been eliminated, the intent of the commitment may not have been met at this location. During preparation for the response to GL 2008-01, it was found that this line contained a void with no vent valve at the high point. DCR 3750 installed a new vent valve at the high point. When the piping was drained and refilled, the void was still present. After KR-30, it was expected that this void would still be present but UT checks found this location was full. This is believed to be caused by the gas being absorbed into the water during RHR system operation. Voids are expected to reappear in this line in the future and additional corrective actions are needed to fully meet the intent of the commitment at this location.

**Summary:** Resolution of the gas accumulations at the identified locations requires additional analysis and/or modifications, some of which can only be performed during a refueling outage. The revised commitment description states:

1. DEK will take actions needed to resolve the gas accumulations at the following locations:

- CVCS-RHR cross-connect piping from the RHR discharge piping
- Suction bypass branch to the SI suction piping
- RHR-to-Spent Fuel Pool interconnection branch line from the RHR discharge piping

Resolution may include installation of additional vent valves, procedure modifications to ensure systems are sufficiently filled after draining for maintenance, or revision of design basis documents to establish new allowable design basis limits on gas accumulation. These actions, originally scheduled to be completed by the end of refueling outage KR 30, will be completed by the end of refueling outage KR 31 (spring of 2011).